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=> s terbium or Tb
L1        65967 TERBIUM OR TB

=> s Auminum or Aluminium or Al
L2      1304000 AUMINUM OR ALUMINIUM OR AL

=> s Aluminum or Aluminium or Al
L3      1746448 ALUMINUM OR ALUMINIUM OR AL

=> s LFZ or (laser float3 zone)
3 IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s LFZ or (laser float zone)
ZONE) IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s LFZ or (laser float? zone)
L4          187 LFZ OR (LASER FLOAT? ZONE)

=> l1 and l3 and l4
L1 IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s l1 and l3 and l4
```

L5 3 L1 AND L3 AND L4

=> d 1-3 ibib abs

L5 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:481503 CAPLUS
DOCUMENT NUMBER: 141:182175
TITLE: Growth of **terbium aluminum** garnet (Tb3Al5O12; TAG) single crystals by the hybrid **laser floating zone** machine
AUTHOR(S): Geho, Mikio; Sekijima, Takenori; Fujii, Takashi
CORPORATE SOURCE: Murata Manufacturing Co. Ltd., Nagaokakyo-shi, Kyoto, 617-8555, Japan
SOURCE: Journal of Crystal Growth (2004), 267(1-2), 188-193
CODEN: JCRGAE; ISSN: 0022-0248
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Incongruent melting of **Tb Al** garnet (Tb3Al5O12; TAG) single crystals has the largest Verdet constant, based on the Faraday rotation, among transparent materials, even though no practically applicable size of TAG single crystal has yet been grown. To grow TAG single crystals, a hybrid **laser floating zone** growth machine was designed, in which four CO2 gas lasers and four halogen lamps were placed around a pedestal. This is capable of both uniform laser heating and lamp pre-heating. TAG single-crystal rods of 3 mm in diameter were grown, which were suitable for the use in optical devices. The crystals showed a full-width at half-maximum in ≥27 arcsec by the x-ray rocking curve measurement. The examined growth directions were randomly dispersed under the no-seed used growth condition. Several optical property evaluations confirmed successful results for high transmittance qualities and a larger Verdet constant than the conventional Tb3Ga5O12 crystals.
REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:159067 CAPLUS
DOCUMENT NUMBER: 140:207890
TITLE: Method for manufacturing **terbium aluminium**-based paramagnetic garnet single crystal
INVENTOR(S): Sekijima, Takenori; Geho, Mikio
PATENT ASSIGNEE(S): Murata Manufacturing Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 18 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
EP 1391544	A2	20040225	EP 2003-18876		20030819
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK					
JP 2004131369	A2	20040430	JP 2003-290578		20030808
JP 3642063	B2	20050427			
US 2004035357	A1	20040226	US 2003-643985		20030820
PRIORITY APPLN. INFO.:			JP 2002-242047	A	20020822
			JP 2002-275990	A	20020920
			JP 2003-290578	A	20030808

AB A method for manufacturing a **Tb Al**-based paramagnetic garnet single crystal which can easily produce a TAG single crystal having a large Faraday effect and a high light-transmittance even in the visual light range is provided, and the crystal, therefore is, usable as a material for a magnetooptical device. The method is for manufacturing a

Tb Al-based paramagnetic garnet single crystal grown by a **laser float-zone** method using a raw material rod made of paramagnetic garnet containing at least **Tb** and **Al** and a seed crystal, while at least one of the raw material rod and the seed crystal is porous, and the method can include the steps of preparing the raw material rod, preparing the seed crystal, melt-joining the raw material rod and the seed crystal, heat-melting the joint of the seed crystal and the raw material rod by application of optical energy thereto so as to prepare a melt zone, and cooling the resulting melt zone.

L5 ANSWER 3 OF 3 INSPEC (C) 2005 IEE on STN
ACCESSION NUMBER: 2004:8102532 INSPEC
DOCUMENT NUMBER: A2004-21-8110H-001; B2004-10-0510-035
TITLE: Growth of **terbium aluminum** garnet (Tb3Al5O12; TAG) single crystals by the hybrid **laser floating zone** machine.
AUTHOR: Geho, M.; Sekijima, T.; Fujii, T. (Murata Manuf. Co. Ltd., Kyoto, Japan)
SOURCE: Journal of Crystal Growth (15 June 2004) vol.267, no.1-2, p.188-93. 11 refs.
Published by: Elsevier
Price: CCCC 0022-0248/2004/$30.00
CODEN: JCRGAE ISSN: 0022-0248
SICI: 0022-0248(20040615)267:1/2L.188:GTAG;1-#
DOCUMENT TYPE: Journal
TREATMENT CODE: Experimental
COUNTRY: Netherlands
LANGUAGE: English
DN A2004-21-8110H-001; B2004-10-0510-035
AB Incongruent melting of **terbium aluminum** garnet (Tb3Al5O12; TAG) single crystals has the largest Verdet constant, based on the Faraday rotation, among "transparent" materials, even though no practically applicable size of TAG single crystal has yet been grown. To grow TAG single crystals, we designed a hybrid **laser floating zone** growth machine, in which four CO2 gas lasers and four halogen lamps were placed around a pedestal. This is capable of both uniform laser heating and lamp pre-heating. We successfully grew TAG single-crystal rods of 3 mm in diameter, which were suitable for the use in optical devices. The crystals showed a full-width at half-maximum in as little as 27 arcsec by the X-ray rocking curve measurement. The examined growth directions were randomly dispersed under the no-seed utilized growth condition. Several optical property evaluations confirmed successful results for high transmittance qualities and a larger Verdet constant than the conventional Tb3Ga5O12 crystals.

ANSWER 1 OF 6 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:481503 CAPLUS
DOCUMENT NUMBER: 141:182175
TITLE: Growth of **terbium** aluminum garnet (Tb3Al5O12; TAG) single crystals by the hybrid **laser floating zone** machine
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REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:159067 CAPLUS
DOCUMENT NUMBER: 140:207890
TITLE: Method for manufacturing **terbium** aluminium-based paramagnetic garnet single crystal
INVENTOR(S): Sekijima, Takenori; Geho, Mikio
PATENT ASSIGNEE(S): Murata Manufacturing Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 18 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2004131369	A2	20040430	JP 2003-290578	20030808
JP 3642063	B2	20050427		
US 2004035357	A1	20040226	US 2003-643985	20030820
PRIORITY APPLN. INFO.:			JP 2002-242047 A	20020822
			JP 2002-275990 A	20020920
			JP 2003-290578 A	20030808

AB A method for manufacturing a **Tb** Al-based paramagnetic garnet single crystal which can easily produce a TAG single crystal having a large Faraday effect and a high light-transmittance even in the visual light range is provided, and the crystal, therefore is, usable as a material for a magnetooptical device. The method is for manufacturing a **Tb** Al-based paramagnetic garnet single crystal grown by a **laser float-zone** method using a raw material rod made of paramagnetic garnet containing at least **Tb** and Al and a seed crystal, while at least one of the raw material rod and the seed crystal is porous, and the method can include the steps of preparing the raw material

rod, preparing the seed crystal, melt-joining the raw material rod and the seed crystal, heat-melting the joint of the seed crystal and the raw material rod by application of optical energy thereto so as to prepare a melt zone, and cooling the resulting melt zone.

L3 ANSWER 3 OF 6 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:173749 CAPLUS
DOCUMENT NUMBER: 132:229235
TITLE: Growth of pure and RE3+-doped Y2O3 single crystals by LHPG technique
AUTHOR(S): Goutaudier, C.; Ermeneux, F. S.; Cohen-Adad, M. T.; Moncorge, R.
CORPORATE SOURCE: Laboratoire de Physico-Chimie des Materiaux Luminescents, UMR 5620 CNRS, Universite Claude Bernard de Lyon I, Villeurbanne, 69622, Fr.
SOURCE: Journal of Crystal Growth (2000), 210(4), 694-698
CODEN: JCRGAE; ISSN: 0022-0248
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB High-quality and crack-free Y2O3 single crystals containing low concns. of Tm3+, Tb3+ and Yb3+ were obtained. The crystals were grown as monocryst. fibers by using a **floating zone** method with **laser** heating (**laser**-heated pedestal growth).
REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 4 OF 6 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:701743 CAPLUS
DOCUMENT NUMBER: 132:43894
TITLE: Magnetic, optical and microwave properties of rare-earth-substituted fibrous yttrium iron garnet single crystals grown by **floating zone** method
AUTHOR(S): Sekijima, Takenori; Kishimoto, Hiroshi; Fujii, Takashi; Wakino, Kikuo; Okada, Masakatsu
CORPORATE SOURCE: Faculty of Science and Engineering, Ritsumeikan University, Shiga, 525-8577, Japan
SOURCE: Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (1999), 38(10), 5874-5878
CODEN: JAPNDE; ISSN: 0021-4922
PUBLISHER: Japanese Journal of Applied Physics
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The crystallog., magnetic, optical and microwave propagation properties have been studied of fibrous rare-earth-substituted Y2.7R0.3Fe5O12 (R:YIG) single crystals, grown by a simple **floating zone** (FZ) method with Y Al garnet (YAG) **laser** heating assisted by IR irradiation, for all rare-earth elements. The 1st purpose of the studies was to seek outstanding properties of R:YIG crystals and the 2nd aim was to obtain data to develop crystals with complex properties, such as large Faraday rotation and low saturation magnetization, by substituting ≥2 rare-earth elements for Y into the YIG crystal. The lattice constant, saturation magnetization, Faraday rotation, optical absorption coefficient, full-width at half maximum (ΔH) of ferromagnetic resonance and microwave propagation in magnetostatic wave (MSW) modes were measured for R:YIG single crystals. Low saturation magnetization in Gd:YIG and **Tb**:YIG, large Faraday rotation in Ce:YIG and low loss propagation of MSW in Lu:YIG were found. The comprehensive results will also contribute to identifying new materials applicable in for optical and microwave devices using R:YIG crystals.
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 5 OF 6 INSPEC (C) 2005 IEE on STN
ACCESSION NUMBER: 2004:8102532 INSPEC
DOCUMENT NUMBER: A2004-21-8110H-001; B2004-10-0510-035

TITLE: Growth of **terbium** aluminum garnet (Tb3Al5O12; TAG) single crystals by the hybrid **laser floating zone** machine.
AUTHOR: Geho, M.; Sekijima, T.; Fujii, T. (Murata Manuf. Co. Ltd., Kyoto, Japan)
SOURCE: Journal of Crystal Growth (15 June 2004) vol.267, no.1-2, p.188-93. 11 refs.
Published by: Elsevier
Price: CCCC 0022-0248/2004/$30.00
CODEN: JCRGAE ISSN: 0022-0248
SICI: 0022-0248(20040615)267:1/2L.188:GTAG;1-#
DOCUMENT TYPE: Journal
TREATMENT CODE: Experimental
COUNTRY: Netherlands
LANGUAGE: English
DN A2004-21-8110H-001; B2004-10-0510-035
AB Incongruent melting of **terbium** aluminum garnet (Tb3Al5O12; TAG) single crystals has the largest Verdet constant, based on the Faraday rotation, among "transparent" materials, even though no practically applicable size of TAG single crystal has yet been grown. To grow TAG single crystals, we designed a hybrid **laser floating zone** growth machine, in which four CO2 gas **lasers** and four halogen lamps were placed around a pedestal. This is capable of both uniform **laser** heating and lamp pre-heating. We successfully grew TAG single-crystal rods of 3 mm in diameter, which were suitable for the use in optical devices. The crystals showed a full-width at half-maximum in as little as 27 arcsec by the X-ray rocking curve measurement. The examined growth directions were randomly dispersed under the no-seed utilized growth condition. Several optical property evaluations confirmed successful results for high transmittance qualities and a larger Verdet constant than the conventional Tb3Ga5O12 crystals.

L3 ANSWER 6 OF 6 INSPEC (C) 2005 IEE on STN
ACCESSION NUMBER: 1999:6425054 INSPEC
DOCUMENT NUMBER: A2000-02-7820L-001; B2000-01-3110E-017
TITLE: Magnetic, optical and microwave properties of rare-earth-substituted fibrous yttrium iron garnet single crystals grown by **floating zone** method.
AUTHOR: Sekijima, T.; Kishimoto, H. (Fac. of Sci. & Eng., Ritsumeikan Univ., Kusatsu, Japan); Fujii, T.; Wakino, K.; Okada, M.
SOURCE: Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) (Oct. 1999) vol.38, no.10, p.5874-8. 19 refs.
Published by: Publication Office, Japanese Journal Appl. Phys
CODEN: JAPNDE ISSN: 0021-4922
SICI: 0021-4922(199910)38:10L.5874:MOMP;1-K
DOCUMENT TYPE: Journal
TREATMENT CODE: Experimental
COUNTRY: Japan
LANGUAGE: English
DN A2000-02-7820L-001; B2000-01-3110E-017
AB We studied the crystallographic, magnetic, optical and microwave propagation properties of fibrous rare-earth-substituted Y2.7R0.3Fe5O12 (R:YIG) single crystals, grown by a simple **floating zone** (FZ) method with yttrium aluminium garnet (YAG) **laser** heating assisted by infrared irradiation, for all rare-earth elements. The first purpose of our studies was to seek outstanding properties of R:YIG crystals and the second aim was to obtain data in order to develop crystals with complex properties, such as large Faraday rotation and low saturation magnetization, by substituting two or more rare-earth elements for Y into the YIG crystal. The lattice constant, saturation magnetization, Faraday rotation, optical absorption coefficient, full-width at half maximum (Delta H) of ferromagnetic resonance and microwave propagation in magnetostatic wave (MSW) modes were measured for

R:YIG single crystals. Low saturation magnetization in Gd:YIG and Tb:YIG, large Faraday rotation in Ce:YIG and low loss propagation of MSW in Lu:YIG were found. Our comprehensive results will also contribute to identifying new materials applicable in for optical and microwave devices utilizing R:YIG crystals.

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